Proposed	ECCV		Footages:			Drilling Contractor:	tbd	
DI-2 Injection			STR:			TD MD / TVD (ft):	10,200'	Directions to Site :
Well		Vertical Injection Well	Lat/Long			RKB / GL:	5030' / 5045'	
Geologic Tops	(MD ft)		Hole Section	Bit/BHA	Drilling Fluids	Casing	Logging	Cement
T/ Fox Hills B/USDW Surface Shoe	970' 1730' 1750'		Surface Drill 14-3/4" 0' - 1750', cut	14-3/4"" PDC Logic 4 x 14s 8" 7/8 4.0 MM, 9 jts: 6-1/4" DC 3 jts: 4-1/2" HWDP 30 jts: 4" HWDP 4" DP to surface	Fresh water <8.8 ppg 28 - 32 FV ALAP PV <6 YP Neutral pH	API 5K wellhead 10-3/4"", 45.5#, J-55, STC from Surface to 1750' Centralizers - bottom 3 joints and every 2nd jt thereafter, Cement basket 3rd jt from surface	Triple combo wireline logs	10 bbl Preflush 204 sx 50/50 cement 14.5 ppg, 1.41 yld, No FW 35% excess FL: No Control TT: 2.5 hrs
Niobrara DV TOOL J Ss Liner Hanger Intermed Shoe	7130' 7,690' 7990' 9,120'		Intermediate Drill 9-7/8"" Hole 1750' - 9,150' Circulate bottoms up int. to avoid penetrating Lyons too far.	9-7/8" R516DUX PDC 5x14s NOTE: Confirm bits with supplier as these sizes have changed from IPT design. 6.75" 7/8 2.9 (0.17)MM Ensign MWD 9jts 6-1/4 DC 3jts 4-1/2" DP 30 jts - 4" HWDP 4"DP to Surface	Mud up @ 6500' Gel Polymer 8.8 - 9.1 ppg 38 - 45 FV 8 - 12 YP 8 - 16 PV 9.0 - 10.0 pH <8 FL	7-5/8", 26.4#, P-110, LTC from Surface to 9150'. DV tool @ 7100'. Centralizers - bottom jt, every joint thro the Codell and Nio, each side of the stage tool, every 4th joint in open hole and 1 jt inside the surface casing	Utilize Sureshot to control	Stage 1: TBD sx 50/50 cement with 20% Silica Flour 14.4 ppg, 1.45 yld Caliper + 15% excess TT: 4 hrs, FL <300, No FW Stage 2: Lead: TBD sx Premium Lite cement, 12.7 ppg, 1.86 yld, Caliper + 15% excess TT: 5 hrs, FL: NC, No FW Tail: TBD sx 50/50 cement with 20% Silica Flour
	9800-9930 9930-10000		Injection Interval Drill 6-1/8" 9,150' - 10,200'	6-1/8" MDi613 PDC 6x13s 4.75" 7/8 2.6 (0.26) MM 30jts 4"HWDP, 4" DP to Surface	Gel Polymer 8.7 - 9.0 ppg 38 - 43 FV 8 - 12 YP 8 - 16 PV 9.0 - 9.5 pH <7 FL	Slotted Liner 4-1/2", 11.6#, J-55, LTC or L80 LTC Slots: 0.060" width, 2" length, 18 slots/row, 4 rows and 72 slots/ft, 3" vertical centers Optional swell packer inside 7-5/8" EOL: 10,200' (Total Liner Length - 1,080') Swell Packers as Required to Isolate Groups per Agreement with EPA	Utilize SureShot for Surveys Triple combo logs + microlog Utilize Thru- Bit Logging if Hole Unstable	No Cement Circulate 1000 gal 10% bleach across injection zone Displace with 3% KCl (or heavier brine if necessary)
TD	10,200'	<u> </u>						